THE VETERINARY RECORD

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The Curability of Glanders.

It is generally accepted that glanders is incurable, and it may be granted that we have no medicinal agent which possesses any specific action on the disease. That there are cases of spontaneous recovery every practitioner with a large experience knows. Especially in the form known as farcy do we meet wfth examples of spontaneous recovery. As a rule, cases of farcy which disappear so far as any lesion can be seen on the surface of the body are only temporarily alleviated; the disease remains localised in the lungs and at no distant date reappears with well marked external symptoms. Some few horses which have shown all the symptoms of farcy or glanders recover and remain at work for years. Post-mortem examinations of these animals are seldom made with care, and it is therefore impossible to say what percentage are real recoveries. There are well authenticatec cases of horses working for eight or even nine years after a distinct attack of glanders, and there are a few careful post-mortems of such animals which show that the only lesions left were two or three calcareous nodules in the lung, which may clinically be accepted as inert and harmless.

Until Mallein had been discovered and largely used our clinical knowledge of glanders only enabled us to say that a few cases—perhaps two per cent—really recovered after the exhibition of distinct external symptoms. Mallein has enabled us to detect glanders in an undeveloped form, and thus the post-mortem appearances of infected lungs have been disclosed in an earlier stage than was ever recognised before. More than this—our experience has been increased by the examination of lungs of horses forming part of infected studs, which show every stage of infection, and strange to say—some stages of recovery. At the recent Hygienic Congress held at Budapest, Professor Nocard stated that his observations showed that spontaneous recovery was far more common than had been supposed, and that in all infected studs there were animals whose lungs showed that the disease had commenced, passed a stage, and then ceased to be active.

This observation explains what has hitherto been inexplicable to clinical observers, viz., the fact that some horses seem to resist infection although forming part of a badly infected stud for years. It is probable that such horses owe their immunity to the fact that they have already been infected but have recovered, and are now proof against further infection.

Mallein has taught us more than this. Its use as a diagnostic has in a number of cases suggested the possibility that it has a curative action, and we shall await with interest confirmation of cases which have been noted in various countries where distinct reaction showing glanderous infection has ceased on a second or third inoculation. We believe that mallein properly used is a reliable test for glanders, and that when a horse fails to re-act to it no infection exists. If this be true these cases which react once but fail to react to future injections can be explained only on the supposition that recovery has taken place by the destruction of the bacilli.

Our convictions as to the curability of glanders must be suspended. Spontaneous recovery in a small percentage of cases is admitted, but it is now possible that this proportion is larger than we ever suspected, and it is probable that by the aid of mallein some of the less developed cases may be cured.

Diagnostic Aids.

The thermometer and the microscope have afforded immense assistance in the diagnosis of disease, and are now admitted as essential aids in every day practice. The time has not long passed since they were looked upon as toys by many good old practitioners, who felt pity and contempt for the man who used anything more than his unaided senses to diagnose a case. We have progressed a long way since that, and now resort to chemico-physiological methods to assist us in detecting disease. For generations it has been recognised that tuberculosis and glanders existed in a latent form incapable of detection by our most expert practitioners. These diseases, until they had progressed so far as to cause grave constitutional disturbance or distinct symptoms, could not be disgnosed. When they were evident and their nature beyond dispute it was often too late either to save the animal or to prevent the infection of others.

Tuberculine and Mallein are now at our service, and suspected animals may be tested with every confidence in the result. The difficulty has been to obtain these re-agents when wanted. We have had either to trust to the generosity of the Pasteur Institute, to Kôch, or to Professor McFadyean for supplies when wanted. Now we can purchase what we require from Messrs. Willows, Francis & Butler, who deserve credit for their business enterprise in providing these useful agents. The telegraph and the parcels post will enable any of their customers to obtain without delay these two indispensable diagnostic aids.

CASES AND ARTICLES

PURPURA HŒMORRHAGICA,
IODINE TREATMENT.

By TEDBAR HOPKIN, F.R.C.V.S., Manchester.

Subject. A black gelding 4 years old, after recovering from influenza, was on June 9th of present year put to a fairly severe Saturday afternoon's work before being in a fit condition. On Sunday it was noticed that the limbs were swollen and there was more or less stiffness supposed to be due to debility. Our attendance was not requested until Thursday the 14th, or five days after first noticed swelling.

Symptoms. Œdematous swelling of the extremities and head, sero-sanguineous discharge from nostrils; pulse 75, temperature 105.

Diagnosis. Purpura Hœmorrhagica.

Treatment. Turpentine in eggs and milk, pot. chlor., and tr. ferri perchlor.

Friday 15th. Symptoms aggravated, chest and abdomen enormously swollen. Performed tracheotomy and adopted the treatment suggested by Prof. Dieckerhoff (Berlin Veterinary School). A translation of a report of this treatment by Mr. J. A. W. Dollar appeared in *The Veterinary Record* for May 26th, 1894. It consists of intra-tracheal injection of a solution made up of

℞	Iodine	1 part.
	Iodide of Potassium	2 parts.
	Water	100 parts.

"3 to 9 fluid drachms of this solution are slowly injected into the lumen of the trachea twice a day." We injected through the tube ʒiv. of this solution, the report was that it produced no inconvenience.

Saturday 16th. Hind legs and head greatly swollen, with serous oozing through the skin and dropping from fetlock pads, also discharge from nostrils and profuse serous exudate from opening in trachea. Injected ʒiii. of solution through opening in trachea.

Sunday 17th. Marked improvement, animal eating fairly well since swelling of lips reduced. Repeated injection of ʒii. of solution.

Monday 18th. In consequence of irritation caused by intra-tracheal injection, gave increased quantity ʒiv. as an injection per rectum (our doses were the smallest recommended and only given once a day). Animal taking gruel and green food.

Tuesday 19th. Further improvement, repeated injection per rectum.

Wednesday 20th. Swelling less, gave ball

℞	Iodi	ʒss.
	Pot. Iodi	ʒi.

Thursday 21st. Injection of ʒiv. Diecherhoff's solution per rectum. Horse eating well and improving.

Friday 22nd. No further medicinal treatment. Made an excellent and rapid recovery.

Mr. Dollar asks for particulars of cases. This makes one to the number, and I shall certainly give the treatment further trial as opportunity occurs. It, in this case cut short the attack, and we were not troubled with more than one change of swelling. All accustomed to treating purpura know how often hopes raised by swellings disappearing are ruthlessly expelled by their re-appearing in increased size in another part of the body. It was not by any means a mild attack and yet recovered without any sloughing of the skin.

The doses given were small in comparison to what is suggested, and although the first per trachea may cause no marked distress we soon reduced ours, as we thought of necessity, and gave per rectum and mouth.

With proper care and judicious administering we have in iodine and iodide of potassium, exceedingly valuable drugs. I have found that pleurisy and pneumonia both are greatly benefitted by their use after the acute febrile stages have passed.

THE FELLOWSHIP.

By T. B. GOODALL, F.R.C.V.S., Christchurch.

I cannot agree with the tenor of your leading article in this week's issue of *The Record* that there is anything at all remarkable in the abstention of Members presenting themselves for the Fellowship Degree. I think that you are wrong in assuming that it is due to the change in the method of the examination; neither are your remarks very charitably expressed towards those gentlemen, who, at considerable trouble and expense, and relying on the good faith of the Council, have already taken the degree.

I am convinced that there are *dozens* capable of easily passing the examination the Council has instituted; but what is the inducement? and where is the guarantee that the Council will *not again break its faith* with whomsoever it may cajole into accepting its terms?

I have always protested both by writing and by word of mouth, against the retrograde policy of the Council on this question.

Members reason as though it were the *Fellows* who made the bye-law granting to themselves certain privileges. It was nothing of the kind; but the Council, before the creation of the degree, guaranteed these privileges as an inducement for Members to take the degree, and then, forsooth in a panic, and frightened by the clamouring of the crowd, stultified itself by ignominiously revoking its own bye-law.

Many of us hope that even now this serious blunder may be rectified.

No fault could have been found with the Council at any time raising the standard of the qualifying examination, and surely a means could have been devised for the creating of an honorary degree for the admission of old and capable Members to the Council, but for a governing body to break its faith was to make such members as may have anticipated taking the degree lose their confidence in the credentials of the party with whom they were about to make a compact.

It must have been clear to anyone who cared to look further ahead than the end of his nose, that the present state of affairs must have been the inevitable result of the action of our Council in a critical period of the Profession's history; there should have been no *looking back*, but *onward* and *upward*.

To our Council I would say then, solely in the interest of the profession and without a thought of personal advantage, because I never aspired to profit in any way by taking the degree—Give to the holders of the higher degree as many privileges as you can, and make the qualifying test as severe as you like, there would be found plenty willing and capable of submitting to it, but not until confidence is restored that our governing body is *strong* enough and *bold* enough, in face of all obstacles, to uphold its own bye-laws.

FRACTURE OF THE PATELLA.

A. W. Mason, F.R.C.V.S., Leeds.

The Fractured portion is here shown partially removed from its position. There is recent callus on the external surfaces around the fracture.

A valuable hunter threw his rider and ran away and, report says, collided with a stone wall.

The case was seen the following day, after removal home, having walked about seven miles fairly well. The region of the stifle joint and thigh was extensively enlarged and tender to the touch; lameness was severe—dragging the limb, evincing acute pain when moved, unable to bear any weight upon it. A small punctured wound on the innerside of the joint discharged a thin watery fluid.

The horse was treated for two or three weeks but made little progress. The diagnosis was synovitis following bruising and perhaps puncture of joint. As a permanent return of soundness seemed impossible and little or no improvement was visible the horse was destroyed.

On post-mortem examination extensive laceration of muscles of region involved and fracture of patella.

were found. The bony specimen I have forwarded with this will show the extent and position of the injury to the patella.

I think the case a rare one, although the pathological lesions present nothing very uncommon.

DESTRUCTION OF THE RIGHT KIDNEY, ETC. IN A MARE.

By Fred. C. Mahon, M.R.C.V.S.

Ruptured kidney, or as in this case total destruction, save as the result of extreme violence, is not a common occurrence.

On Friday, the 10th inst., I was urgently summoned to see one of my contract horses. She was in good health on the 8th, and worked well the whole of the 9th. She was a roan mare, seven years old, in excellent muscular condition, well and regularly fed, and since coming under my notice had had a severe attack of influenza, leaving apparently no untoward results. On the morning of the 10th, about 7.15 a.m., she was taken to be shod, left for an hour by the driver, who, on return, found the mare sweating profusely, uneasy, haggard, and looking startled. On asking the farrier to account for the symptoms he replied "The mare has colic, I have given her accordingly a draught, and as she still remains in pain will give another," which was done.

The case being reported, I was sent for, and on arrival about 2 p.m. the same day found the following symptoms.

Temperature 100, pulse 52 per minute, wiry, little volume; respirations laboured, 16 per minute, with double expiratory effort. Ears and extremities warm; patchy perspirations bedewed the flanks, drying rapidly, and suddenly reappearing, involving a larger surface at each renewal. No appreciable tenderness over the loins, total inability however to move from side to side, or backwards. Abdomen tucked up, back slightly arched, defecation and urination suspended. Appetite capricious, drink refused. The last two ribs on right side were visibly indented, and by the following morning a swelling, appearing as an ovoid protuberance on the 10th, had become pronounced in size, hard to the touch, and pitted somewhat on pressure towards its centre. My diagnosis

was ruptured kidney with fractured rib, verified by the post-mortem examination on the 4th day after attack.

On being led by the driver to the farrier's on the morning of the 10th she shied at a passing vehicle, and slipped on the wood paving by which act, if we can believe the statement of her driver, the off hind leg slipped transversely under the body, and the quarter on that side dropped, but she recovered herself before coming near the ground. Could this slight accident have caused the above-mentioned defects. I say not!

Rectal examination revealed nothing, but on the eve of the 2nd day a slight quantity of blood-tinged mucus was found on the removed fæces. The urine was scanty, blood-tinged, and after micturition the mare was convulsed, breathing accelerated, and she appeared every moment as if coming to the ground.

In this condition she remained for four days, and fed little in the interim. Water drunk but scantily. The hind shoes removed on the 2nd day, with difficulty, and feet examined; as the driver on leading her away from the forge and suspecting a pricked foot, took her back, and had the off-hind shoe removed and replaced, but the farrier found nothing. Before describing the post-mortem appearances, I may add the mare would endeavour to place weight on the off-hind, and take it off the near, but this act caused great pain, and was not often attempted.

On the mare being destroyed on the 14th of August, over the seat of fracture and involving both the sub-dermal and connective tissues, a reddening, due to blood effusion, was seen; and this effusion had burrowed its way through the channel made by the end of the fractured and displaced portion of rib, into the peritoneal cavity.

On the abdomen being opened, a quantity of blood, coagulated, dark red in colour in and around the loins was seen, the right kidney was found to have been totally destroyed and the fractured rib bulged inwards, and the fractured end had punctured the abdominal muscles. The liver entire, spleen likewise, diaphragm ruptured in two places to the extent of half-an-inch, and recently. All the thoracic and abdominal viscera other than those mentioned intact. No trace of disease in the left kidney or bladder. The right kidney both in its cortical and medullary portions was softened, and fairly pulverized, a quantity of reddish brown blood, congulated, surrounding the destroyed portions. I do not for one moment believe that inflammation of however acute a character and rapid could in the brief space of the mare's illness have brought about such a result. It is more than probablidity that the fractured rib penetrated the kidney, and caused the partial rupture throughout its extent, from without to within; and inflammation of a destructive character ensuing, produced the dire mischief. Can any reader propound a theory other than direct violence to account for the symptoms I have detailed above?

Percivall in his "Hippo-pathology" gives several causes of ruptured diaphragm, broken wind, etc., following upon horses "falling down in their sleep, working whilst suffering from catarrh to a severe extent, accompanied by violence, as by kicking, etc. fractured ribs as a consequence of the latter act," but on the score of kidney mischief is, like many other writers' silent.

Ruptured liver, diaphragm, rib, spleen I have encountered, but not a totally destroyed kidney, and cannot subscribe to any idea of causation other than by a rapid impacted blow.

"OURSELVES."

It is fortunate that the veterinary profession has on the whole kept progress with the much vaunted Victorian era. We have now a voice in matters previously unheard of; some of the largest horse owning establishments in this country are controlled, and in some cases directly managed by veterinary surgeons. Our varied knowledge of horse requirements and horse management can be rendered of inestimable value both to the private owner and to the State. Our advice is sought in all public enterprises connected with live stock generally, and all this and much more have we accomplished not as the result of a very high standard of professional education, but as the result of close observation and an intuitive knowledge of animals.

The cattle plague made the veterinary profession in this country, for up to that time probably not five per cent of the population had any knowledge of our existence; we have no reason to be ashamed of the progress we have made between 1865 and 1894.

What the private practitioner of this country has done for cattle the army veterinary surgeon has done for horses; both have demonstrated their capacity for dealing with, stamping out, and excluding from the animals of this country those contagious maladies to which they are heir, and what the army veterinary surgeon has done for horses his civil *confrére* can do, if the same free hand be given him.

In addition to the progress we have made, both practical and scientific, we have not been unmindful of our duties to the future generation, and a determination to improve our professional education by rendering it more thorough and more searching has met with nearly universal support. What was good enough for our forefathers is *not* good enough for us, any more than the medical education of the beginning of the century is good enough for the specialist practising in Harley Street!

We are elbowing our way slowly, very slowly, to scientific recognition; whatever recognition we do receive is for our worth and not for any friendly feeling at present held towards us, we have advanced all along the line and even our enemies are ready to acknowledge this.

It was only by dint of hammering that a veterinary section of the International Congress of Hygiene was established, its well filled meetings in London, and excellent papers proved that its birth met a want and that our efforts were appreciated.

Our future as a profession, lies in our own hands. We must keep pace with the times, there is no standing still, a body or an individual must either advance

or go back. As education advances we must advance, as science progresses we must bring her more and more to our aid; no stone must be left unturned to improve our position professionally and socially, and on these the governing body must for ever maintain a zealous and watchful eye.

"Optimist."

THE COLONIAL GRIEVANCE.

The enclosed cutting, I cull from a newspaper just to hand, *The Siam Free Press*, published at Bangkok. It is a just example of what the British V.S. has to contend against, when he abandons home and friends and attempts to gain an honest pittance in the Colonies, etc.

THE BANGKOK VETERINARY INFIRMARY AND SHOEING FORGE.

CUSTOM HOUSE ROAD.

R. P. Von Wittekind, M.R.C.V.S.B.

Fellow of S.P.C.A., London.

Late Government Veterinary Surgeon of Madras, Rangoon, and Perak States.

Bangkok, July 11th.

Who "R. P. Von Wittekind, M.R.C.V.S.*B.*" is, I do not know. I plead ignorance as to the interpretation of the final *B*. Does it represent Britain, or Berlin? I am not aware that the schools of the latter city confer the apparently, much coveted degree of "M.R.C.V.S." Perhaps, this final letter stands for Bangkok? But I have not yet heard that a veterinary school exists in Siam! "Fellow of the S.P.C.A. London" is intensly interesting to the entire veterinary profession. How long this well known institution, the S.P.C.D.A. has held the right to license practitioners or ordain veterinary surgeons, I am at a loss to know. Perhaps oue of their subscribers—or inspectors—will enlighten me?

Surely the time has now arrived when the members of our esteemed Council should make some attempt to assist the British V.S. abroad, and thus commemorote their term of office by obtaining the muchly-needed protection for a class of long suffering members of a worthy profession? If out of sight they shonld *not* be out of mind.

Resurgam.

Cannabis Indica.—A Correction.

In the article by Mr. E. Wallis Hoare printed last week, p 159 nearly half-way down the column, *an ounce* was printed in error for 10 *ounces*.

EXTRACTS AND NOTES.

ANIMAL VACCINES.

By J. A. W. Dollar, Esq.

At the last meeting of the National Veterinary Association two papers were discussed. The following is an abstract from the first division of Mr. Dollar's subject.

The essayist divided his subject into three parts—thus:—

(1) The Origin of Protective Inoculation.

(2) The Methods of Conferring Immunity against the Common Diseases of Animals.

(3) The Views held as to the Nature of Immunity.

HISTORY OF PROTECTIVE INOCULATION. (I)

It is matter of common knowledge that in certain infective diseases one attack seems to guard against a second. This is the basis of all protective inoculation.

Whatever the means employed, the end is the same—viz., to produce a modified and benignant form of disease which shall leave the system proof against the original malady. This great principle underlay the work and teaching of Jenner, just as it later underlay the experiments of Pasteur.

But neither Jenner nor Pasteur was original in recognising the fact, for it had been known and, practically, utilised for hundreds of years previously.

During the middle ages smallpox proved a veritable scourge in Europe, carrying off in its periodical progresses hundreds and thousands of lives. Its ravages naturally stimulated the search for some antidote, and it was very early found that inoculation produced a form of disease which, while less severe than usual, yet conferred full protection. The Turks, in particular, regularly resorted to it, as was pointed out in 1718 by Lady Mary Montague, in one of her famous letters, and so impressed was she with the value of the precaution, that she submitted her own children to it.

Certain unsuccessful cases, however, combined with the opposition of the clergy, discredited the operation, though in France its use continued until the great discovery of vaccination by Jenner.

Vaccination signalised a new era. Not that it was so important a pathological advance, nor that it revealed an absolutely new principle, but that it replaced an unreliable and dangerous process by a certain and safe one.

Both in this country and in France and Germany it had been known that milkmaids who had been inoculated with cowpox (French "picote") were afterwards proof against smallpox, and it is related in a most exhaustive paper on "Inoculation," read to this Association by the late Mr. Archibald Robinson, of Greenock, that a certain Mr. Jesty, of Downshay, in the Island of Purbeck, had taken cognisance of the fact, and, applying it practically, had in 1774 inoculated his wife and two sons with cowpox. So successful was the operation, that, though the family was frequently exposed to smallpox during the period of thirty-one years, none of them contracted the disease. The facts are vouched for by a number of physicians and surgeons. Mr. Jesty seems therefore, to have been first in the field; but we are altogether indebted to the untiring energy and splendid devotion of Jenner for the general adoption of vaccination.

It will be seen that thus far advances in the direction of protective inoculation had been distinctly empirical. Inoculation aimed at producing a mild attack of small-

pox. Vaccination had as its basis the observation that cowpox was transferable to the human subject, that it ran a benign course, and conferred immunity from smallpox.

Pasteur's coming, then, marked the third great epoch in the history of our battle with disease. In his discoveries the deadly virus serves as a starting point for the vaccine. The hand of man plants it, his art propagates it independently of animals, he increases its venom or mitigates it at will, and, finally, turning it from its deadly nature, "plucks from this nettle danger the flower safety."

Jenner had established a great fact, Pasteur established a great principle.

The early life of the great French scientist was devoted to chemistry. He afterwards took up the study of fermentation and the diseases of wines and beers. From this he was led on to investigate the diseases of silkworms, and his essay in his field of animal pathology was made in connection with fowl cholera.

After dwelling long on Jenner's discovery, this question arose in Pasteur's mind: If contagious maladies do not repeat themselves, why should there not be found for each of them a disease which, whilst differing from, yet has some likeness to them, and which, acting in them as cowpox does in smallpox, would have the virtue of a prophylactic? The elements of the virus are living beings, which can be kept in artificial cultivations; and, as they are only distinguished from other lowly-organised beings and plants by their property of invading the bodies of men and animals, the question naturally presents itself: Would it not be possible to modify them by cultivation, just as other plants are modified? A chance occurrence, one of those chances which not infrequently occur to those who are steadfastly looking out for them, opened out to Pasteur the way to a discovery which may well be classed amongst the greatest of the age.

In studying chicken cholera M. Pasteur struck on the means of obtaining an attenuated virus. This disease is caused by small cocci, about two to three micromillimetres in diameter. When these are injected into the connective tissue of a fowl the animal dies next day with characteristic symptoms of diarrhœa and exhaustion. Old cultivations of these cocci, however, not only do not produce death, but confer immunity against subsequent inoculation with virulent cocci.

By causing this microbe to pass from culture to culture, in an artificial medium, a sufficient number of times to render it impossible that the least trace of the virulent matter from which it originally started should exist in the last cultivation, Pasteur furnished the absolute proof that infectious microbes are the sole authors of the diseases which correspond to them. This culture may be repeated ten, twenty, a hundred, even a thousand times; in the last culture the virulence is not extinguished, not even sensibly weakened. But it is a fact, worthy of attention, that the preservation of the virulence in successful cultures is assured only when no great interval has been allowed to elapse between the cultures. For example, the second culture must be sown twenty-four hours after the first, the third twenty-four hours after the second, the hundredth twenty-four hours after the ninety-ninth, and so on. If a culture is not passed on to the following one until after an interval of several days or several weeks, and particularly if several months have elapsed, a great change may then be observed in the virulence. This change, which generally varies with the duration of the interval, shows itself by the weakening of the power of the contagium. If the successive cultures of fowl cholera, made at short intervals, have such virulence that ten or twenty inoculated birds perish in the space of twenty-four or forty-eight hours, a culture which has remained, say, for three months in its flask, the mouth of which has been protected from the introduction of all foreign germs by a stopper of cotton wool, which allows nothing but pure air to pass through it—this culture, if used to inoculate twenty fowls, though it may render them more or less ill, does not kill any one of them. After some days of fever they recover both their appetite and spirits. And, further, if new cultures be made from the mitigated virus, none of the former virulence returns. The daughter cultures have exactly the same effect upon fowls as the mother culture had when it furnished the seed. The new property of the virus, viz., that of harmlessness for those animals to which it was previously so fatal, can be perpetuated for successive generations.

But, if this phenomenon is extraordinary, here is one which is surely as singular, though in a different sense. If, after the cure of these twenty birds, they are re-inoculated with a very virulent virus—that, for instance, which has just been mentioned as capable of killing its hundred per cent. of those inoculated with it—those fowls would become rather ill, but they would not die. The conclusion is simple; the disease can protect *from itself*. It has evidently that characteristic of all virulent diseases, that it cannot attack a second time.

However curious they may be, the above principles are not things unknown in pathology. The great novelty which is the outcome of the preceding facts, and which gives them a distinctive place in our knowledge of virulent diseases, is that we have to deal with a disease of which the virulent agent is a microscopic parasite, a living organism, cultivated outside the animal body, and that the attenuation of the virulence is in the power of the experimenter. He creates it, he diminishes it, he does what he will with it; and all these variable virulences he obtains from the maximum virulence by manipulation in the laboratory. Looked at in juxtaposition with the great fact of vaccination for smallpox, this weakened microbe, which does not cause death, behaves like a real vaccine relatively to the microbe which kills, producing a malady which may be called benign, since it does not cause death, but is a protection from the same malady in its more deadly form.

The attenuated virus therefore discovered by M. Pasteur is quite an efficacious against chicken cholera as Jenner's vaccination against smallpox. But while we are ignorant of the relations between smallpox and vaccine, none of the relations between the vaccine virus and the virulent virus of chicken cholera are hidden from us.

Section II. is well worth reproducing but its length forbids and it will not bear mere quotation.

IMMUNITY. (III.)

In considering the problem of acquired immunity, we have to answer the questions: (1) What is immunity? (2) What is the material which confers it? (3) What are the changes on which its production rests?

Immunity may be defined to mean the power which the animal organism possesses of so resenting the presence of a disease-producing microphyte as to protect itself against disease.

The first attempt to explain the artificial production of immunity was that of Pasteur. Watching his artificial cultures, Pasteur discovered that after a certain time the organisms ceased to grow; that whereas they had previously been distributed evenly throughout the fluid they now began to subside, and that presently they fell to the bottom of the fluid, forming a well-marked precipitate. If left sufficiently long it was found no results followed the transplantation of a little of this sediment into a fresh flask of bouillon, and Pasteur rightly concluded that the organism was dead. Why was this? The answer seems perfectly clear. Just as a plant ultimately exhausts the soil in which it grows, so these little

microbes had exhausted the fluid where they had been planted, and had ultimately perished for want of nourishment. If the growths were transplanted to fresh bouillon before it had lain too long at the bottom of the flask, it was found to be just as capable of increase as ever. The parallel between the process in the flask and the process in the body seemed so obvious that in the then state of pathological knowledge Pasteur may well be forgiven for having used it to explain conferred immunity. His suggestion was that the growth of the organism in the animal body depends on the presence there of a certain peculiar pabulum, that this pabulum is consumed by the modified bacilli used as "vaccine," and hence, when virulent bacilli are afterwards injected, they are unable to multiply--in a word, they are "starved out."

But this theory also presupposed not only that the specific pabulum was exhausted, but that it was never renewed again, which is both contrary to all probability and to ascertained fact. Other experimenters soon pointed out that anthrax bacilli grew abundantly in bouillon made from the flesh of refractory animals and in their organs after death, whilst it has since been shown that tetanus bacilli can perfectly well exist in the bodies of animals which are absolutely proof to that disease, and that anthrax bacilli multiply freely in the anterior chamber of the eye of sheep which are fully protected against anthrax. This idea had therefore to be abandoned.

Very shortly afterwards Chauveau formulated his theory (since revived in a modified form), which was that immunity consists not in exhaustion of the soil, but in the addition of something to it. In a similar way to Pasteur, Chauveau had found that many micro-organisms form, during their existence, certain bodies belonging to the aromatic series of fatty acids and alcohols, and that these were inimical to the growth of the organism. One body so formed is phenol or carbolic acid. "These organisms," said Chauveau, "are killed, not by exhaustion of the soil, but by their own metabolic products, and perish, like the victims in the Black Hole of Calcutta did, from non-removal of the results of their vital activities."

It was soon proved that the bactericidal properties of these bodies is so feeble, and the quantity in which they are produced so small, that they could not have any appreciable action on growth in the animal body. But the carrying out of this idea, viz., that in the vegetation of the pathogenic organisms substances are produced which are inimical to their own development, eventually led, through a succession of steps in experimental research, to the better knowledge which we now possess. The first of these steps was, I think, the discovery by Messrs. Smith and Salmon that pigs can be protected against pig typhoid by inoculating them with the liquid in which the germ of the disease has been cultivated. The same year a similar discovery was made by the late Dr. Wooldridge in reference to anthrax. This was a year later succeeded by the discovery of MM. Chamberland and Roux, that in guinea-pigs immunity from splenic fever was acquired by injection into the peritoneal cavity of anthrax cultures sterilised by heat. A more effective material is produced by filtration through porcelain.

But this vaccination does not depend on the vaccine directly killing the bacilli, but on its action on the animal tissues, for it has been found that the bacilli can still grow very well in the filtered fluid used as "vaccine." As the vaccine does not kill bacilli outside the body, its protective action must be due to its awakening an inhibitory or destructive power which was previously latent or feeble.

The main question becomes, then, What happens in the body when these germ-free fluids are injected? Though it had long been known that the blood possesses an extraordinary power of destroying septic organisms, Von Fodor was the first to draw marked attention to the fact by his paper on the power of the blood to destroy pathogenic bacteria. He showed that the bacillus anthracis when injected into the blood is destroyed with extraordinary rapidity, and Nuttall demonstrated that both defibrinated blood and serum possess a similar quality. The same authority found that if anthrax bacilli be sown in frog's lymph they quickly become granular, and then so pale that they cannot be made out without staining. Finally they are destroyed. This process can go on quite independently of the action of leucocytes. Buchner afterwards extended these researches of his predecessors and corrected some mistakes. The experiments which I have here slightly indicated serve to show the possible existence of a chemical agency in the living organism—an agency apart from the cells—capable of destroying infective microphytes as rapidly and effectively as corrosive sublimate. Such an agent may protect either by destroying or inhibiting the development of the microphyte, or by antagonising its chemical action.

Emmerich found that by injecting small doses of virulent cultures of rouget into the veins of rabbits he could confer immunity to that disease. That is to say, such a condition of blood was produced that, whereas in unprotected animals the injection of a fatal dose was followed by death on the fifth day with a temperature of 100dgs., and the blood was found swarming with bacilli, in the vaccinated animal there was little or no disturbance, and in eight hours the bacilli had absolutely disappeared from the blood.

Then came the question, Was this destruction of the bacilli dependent on the manufacture of life products of bacilli, or of some antibiotic substance (alexin) in the blood? The answer was furnished by taking an immunised rabbit whose tissues contained no bacilli, though they possessed antibiotic properties. By subjecting the previously minced muscle substance of this rabbit to pressure, and filtering through porcelain, a material was obtained which, when injected into a susceptible rabbit, conferred on it an antibiotic state, so that if a sufficient quantity of this substance were injected immediately after a fatal dose of the virulent culture of rouget, the development of the disease was averted. A few years before this would have been attributed to the direct action of the microbic life products on the rouget bacilli, but this cannot be admitted when it is known that certain pathogenic microphytes continue to live in the animal body long after death, when the relative quantity of their life products present must be enormous. Consequently there is only one possible alternative, viz.: that though the bactericidal substance is a chemical one, it is not identical with or contained in the substance introduced, but is what is termed in physiology a metabolic product.

These experiments were supplemented by those of Vaillard, Roux, and others (see previous sections), with tetanus and anthrax bacillus-free fluids. Another interesting fact was brought to light by their experiments, viz.: that a certain interval is necessary before any protective action results from the injection of filtered culture fluids, and this tends strongly to support the above view, viz.: that the material contained in sterilised or filtered cultures does not of itself exercise the protective action against subsequent inoculation, but that it rouses to action certain dormant functions of the organism, thus acting as a kind of ferment or enzyme. Such a conclusion has been enormously strengthened by the work of Behring and Kitasato, who have brought into practical application the use of the blood serum containing this protective material (antitoxin or alexin) and have shown that by previously injecting small quantities

of such serum, complete immunity can be given against tetanus and diphtheria.

I may perhaps be excused for digressing here for a few moments to refer to some interesting researches of Hankin on the intimate nature of this protective substance. He considers that the production of the protective substance is intimately connected with a febrile reaction. He has shown that if rabbits are inoculated with very virulent anthrax, no febrile reaction is set up, and the animals die rapidly. Inoculation with less virulent material is followed by a rise in temperature, and the animal resists for a longer time. If, then, fever is a sign that alexin is being formed in the blood, it should be possible, by producing such a reaction, to protect from otherwise virulent inoculation. This has been done by Buchner, who finds that rabbits may be protected against anthrax by simultaneously injecting pneumonia cultures, which set up the necessary febrile reaction.

"But," it may be said, "perhaps the increased temperature is of itself sufficient to kill the bacilli, without requiring the intervention of any metabolic product like alexin." Such a suggestion is, however, negatived by the observation made by Buchner that virulent bacilli could still be found in the body of a rabbit whose inoculation had been followed by a rise in temperature to 44°C., which would have been amply sufficient to attenuate, or even kill, the same bacilli when growing in a test tube.

The following experiment of Hankin's throws further light on the subject, and indicates another way of arriving at an explanation of the significance of fever. A rabbit was inoculated with anthrax, and 24 hours afterwards was found to have a temperature of 40·4°C. It was then decapitated, and is blood allowed to flow into alcohol. After some days the precipitated proteids were filtered off, dried, and extracted with water. The extract was filtered, and found to have the power of killing anthrax bacilli. In several other experiments Hankin succeeded in extracting a bacteria-killing substance from febrile blood. From normal blood, on the contrary, he could not by this method prepare a solution having bactericidal properties, except in one or two cases, and then only to a very slight degree.

The substances involved in this bactericidal action were named by Hankin "protective proteids," and his next experiments had for their object the further identification of their chemical constitution.

The experiments of Salmon, Roux, Chamberland, Chantemesse, Widal, Wooldridge, Charrin, Ruffer, and others, had proved that immunity against various diseases can be produced by injecting the soluble life-products of microbes. These were generally considered to be ptomaines or animal alkaloids, but many considerations negative this view. For in the first place, if acquired immunity is of this nature, we are dealing with an acquired tolerance of a poison, which tolerance is conferred by a single dose, or at most a very few doses, of this alkaloid. Now, though tolerance of alkaloid does occur, it is limited in degree, and only obtained after a long succession of doses. Secondly, since acquired tolerance of this hypothetical poison results in the microbe being no longer capable of living in the body, this theory implies that the poison in question is produced by the microbe in order to enable it to live there. In other words, that it is a poison capable of lowering the bacteria-killing power possessed by every living animal body. Of course, a ptomaine might do this, though such have not been described; but certain albumoses produce a tolerance resembling that of microbic poisons. The first is the ordinary hemi-albumose of proteid digestion, of which one minute dose protects against another for twelve hours. The second is the albumose of snake poison. Sewall injected a few minute doses of it into pigeons, and found that they were still protected from lethal doses three months after. These and other facts strongly suggest that immunity against disease is immunity against an albumose.

Secondly, we find that all poisons which are supposed to suppress the bacteria-killing power of the body are albumoses, or at least inseparable from them. Thus the juice of the papain tree, when injected into the body, allows the bacteria normally present in the intestine to wander into the tissues and produce a kind of septicæmia. The same is true of jequirity. Lastly, non-lethal doses of snake poison sometimes produce the same effect. Thus we see that the only poisons known to have the power of aiding the growth of bacteria in the living body are not alkaloids but proteids. This facts gives further probability to the idea that not ptomanies but poisonous proteids, are the substances concerned in aiding the entry of disease producing bacteria into the body, and consequently, when tolerance of them is acquired, of giving immunity against disease. Hankin isolated such an albumose from anthrax cultures, and was able to confer immunity on rabbits by injecting them with minute quantities of it, though any increase over the normal dose was inevitably followed by the death of the animal. Finally, he concludes that resistance to disease-germs depends on the presence of certain globulins whose increased formation is excited by the reception of the above-mentioned albumoses. If the globulins can be produced more rapidly than the poisonous albumoses the latter are neutralised, and the bacilli producing them are soon destroyed; if, on the other hand, the albumoses preponderate, the animal succumbs to their poisonous effect. Hankin also obtained a globulin from lymph glands which killed anthrax bacilli.

To resume: a third hypothesis which sought probably to explain smallpox vaccination was supported by Buchner and Wolfberg, though it is at the present time almost given up. I may term it the local hypothesis It suggests that in the disease produced by vaccination. the entire skin undergoes a change. In the vesicles the weakest cell-elements die, whilst the more vigorous survive; a suggestion which is supported by microscopic examination, inasmuch as one finds in the vaccinal vesicles both cells which have undergone coagulation necrosis, and others which are increasing in size and multiplying. After recovery from the disease only the more vigorous cell-elements remain, from which the new epidermis is formed. As the properties of the vigorous cell are inherited by its successors, the skin at the point where the disease organisms have been most numerous, only contains elements of the same character as could not be destroyed by the variolous contagion. Immunity is therefore supposed to be produced by the destruction of the weaker cells and the inheritance of acquired peculiarities, thus constituting it a particular case of Darwin's principle.

Another explanation of immunity is given by Ribbert. He terms it the inclusion theory (Umhüllungstheorie). The white blood corpuscles are supposed to surround the bacteria, and prevent their forming poisonous products by cutting off the supply of oxygen necessary for growth.

Lastly, we have to consider the theory of phagocytosis advanced and supported with such skill by Metschnikoff. The basis of this theory is most lucidly and completely set forth in M. Metschnikoff's work on Inflammation. He found that any injury to the animal body was at once followed by the passage of leucocytes through the walls of the neighbouring vessels (diapedesis), and their advance from all sides towards the injured spot. Once arrived, the leucocytes were seen to approach foreign particles or bacteria, and to gradually engulf and digest them. When the number of bacteria was large, it was

found that they might multiply more rapidly than the leucocytes could digest them, and thus might quickly advance into the surrounding tissues, despite the utmost efforts of the white blood-corpuscles; or it was found that certain bacteria possessed the power of paralysing the leucocytes, so that although these were present in considerable numbers they were no longer capable of envoloping the bacteria. Metschnikoff compares the scene to a veritable battlefield, in which the invaders are the microbes and the defenders the leucocytes. If the invaders triumph the diseased condition becomes general; if the defenders are victorious the bacteria are annihilated and recovery occurs. In the latter case the leucocytes which survive are evidently those best fitted to overcome the bacteria in this miniature warfare: they are better provided for the struggle for existence. This property, said Metschnikoff is handed down to their descendants, hence the origin of acquired immunity. The opponents of this theory have, however, rather pertinently pointed out that leucocytes are not principally not even largely descended from previous leucocytes, but are chiefly formed by certain special tissues, as the spleen, marrow of bone, etc.

Metschnikoff explains the migration of leucocytes towards the scene of action, by suggesting that just as certain male plant-cells (oosperms) are attracted by the secretion by the female cells of acid solutions, so the blood-corpuscles are attracted to the inoculation spot by the peculiar chemical products of the microbe. In other words, the white blood-corpuscles are drawn towards the microbes by a "chemical sensibility" which Metschnikoff calls positive chemotaxis.

But (to revert to our illustration) if the degree of concentration of the acid be too great, the oosperms are repulsed. Just in the same way if the bacteria products are present in excess the leucocytes are no longer attracted towards the bacteria, but are driven off or at least paralysed in so far as their destructive powers are concerned. This Metschnikoff terms negative chemotaxis.

Inflammation, then, can no longer be viewed as a degenerative process, but as the means by which the animal body is guarded against the entrance of infection. And Metschnikoff attributes to the white blood corpuscles and certain similar cells the exclusive rôle in ensuring this protection.

Applying this theory to the explanation of disease, we have seen the possible effects of a local infection. But this is the least difficulty. The great crux for all such hypotheses lies in the explanation of conferred immunity. Metschnikoff's suggestion is that after the repeated injection of small quantities of the specific poison, or "vaccine," the tissues, and especially the leucocytes, become "accustomed" to its presence, and are no longer incommoded when the bacteria are introduced in large quantities, so that they are able to approach and destroy the latter without difficulty.

But if this idea be carefully considered, it is seen to mean little or nothing, and is, in fact, only another way of stating an unexplained fact; though it certainly has one advantage—that, namely, of enabling us to explain by analogy the general character and duration of immunity. Viewed in this light, it appears to receive some support from the work of Ehrlich in connection with ricin and abrin, in which it was shown that a very great similarity exists between the process of immunising against bacteria and against the above-mentioned substances. Solutions of ricin produce a similar effect to small doses of bacterial toxins, *i.e.*, immunity against the injection of solutions of ricin may be produced by the previous injection of successive small doses. Ehrlich discovered an antitoxic body, which he termed "antiricin," in the blood of animals rendered immune to ricin.

This material continues to exist for comparatively long periods in the blood, and it was found that animals could be rendered immune by the injection of blood of other animals already immune to ricin, just in the same way as immunity against diphtheria can be given by injecting blood of animals protected against that disease.

But in spite of these analogies, immunity to bacterial products is quite different. If an animal is immunised against anthrax, or a man against smallpox, the next invasion by virulent microphytes is not accompanied by the reception of any poison; but the animal tissues check the multiplication of bacteria, and thus the production of the poison. An animal which has become "accustomed" to a particular kind of bacterial toxin is by no means necessarily in a position to prevent the growth of the bacteria which produce that toxin. This has been shown by Kitasato's experiments with tetanus. He treated mice and rabbits with increasing doses of filtered cultures, and was thus able to produce a certain habituation to the poison, but never immunity. The tetanus bacilli could always grow in the bodies of such animals. This, of course, disposes of the theory that acquired immunity solely depends on habituation to the poison.

Other objections are:—

That the rapidity and completeness of phagocytosis does not always correspond with the resistance of the animal to disease; and

That it is not clear whether the living virulent bacteria are taken up by the phagocytes, or only those which have undergone dengenerative changes.

In a paper of this kind it is manifestly impossible to deal with all the objections which have been brought against the "cellular" theory. The latter certainly seems to explain a vast number of facts which are otherwise inexplicable. At the present time the liveliest controversy wages between Metschnikoff and his school, who support the theory of phagocytosis, and Buchner and his disciples, who believe that protection is due to the qualities of the serum (humoral theory). Neither theory explains all the observed facts, and perhaps, as in many such cases, the truth will finally be found to lie between them. The blood-plasma and blood-corpuscles are so intimately connected that any effort to artificially isolate them necessarily introduces elements which completely vitiate the result. But it certainly seems that if the phagocytes do destroy the bacteria they must effect their purpose by some chemical substance which they secrete, and which is more or less soluble in the serum. If this be so, it might explain at once the contention of Mechnikoff that the formed elements of the blood destroy the bacteria, and that of the "humoralists" that the antitoxic substance is found in the blood serum. For as the white corpuscles in contributing to the formation of fibrin undergo a process of degeneration, it seems very possible that the peculiar antitoxic substance might be set free, and, dissolved in the serum, furnish that product on whose presence as a soluble chemical substance the humoralists chiefly rely to substantiate their views.

The entire subject is, however, receiving the most earnest attention of a large number of workers. Its successful solution may with confidence be looked forward to, and bids fair to form the basis of as magnificent advances in the field of therapeutics as did the discovery of attenuated viruses in that of prophylaxis.

Influenza at Yarmouth.

All the Corporation horses at Yarmouth are suffering from an attack of influenza, and the Town Council have been compelled to hire a fresh supply. All the wood and iron mangers in the Corporation stables have been ordered to be removed.

THE TREATMENT OF SIDEBONE.

Interesting case at Pershore.

At the Pershore Petty Sessions, on Tuesday, William Bennett, 20 Washington Street, Worcester, was charged with cruelly illtreating a mare at Pershore on August 9th, and with illtreating a horse at Strensham on August 12th, and a horse at Defford on the same date. Mr. G. New (Evesham) prosecuted, and Mr. J. B. Matthews (Worcester) defended. In the first case Joseph Spiers, railway agent, Defford, said he owned a number of horse including a mare named Darling. Witness saw defendant at Defford, and had a conversation about the mare. The mare was not lame before it was treated by defendant. Defendant treated the mare for sidebone. Witness noticed the mare the next day and found the place had got very hard and callous, and that there was cracking round the hoof. A blister had formed, and corruption was discharging. The wound got worse, and it was worse that day than it had been before, as it now had an open wound. The mare appeared to be in very great pain, and walked with great difficulty.

By Mr. Matthews: The mare had been suffering for two years from the sidebone, but had not gone lame. He had the operation performed to remove the sidebone. Witness did not know that his brother had written to defendant to perform the operation. Witness's brother was unable to be present owing to having had a stroke.

Ben Taylor, labourer, in the employ of Mr. Spiers, said he met defendant in Pershore, on August 9th. Witness took the mare to Head Street and there saw defendant. Defendant took a bottle and brush, cut the hair off, and applied something out of a small bottle to the mare's leg, for about five minutes. Defendant told witness not to bathe it and not to do anything to it at all. He saw defendant again in the evening and defendant again applied the same stuff to the mare. The stuff produced by Mr. New was similar to it. A few days after, witness noticed the hoof cracking all round where the stuff had been applied. He told his master, and they left off working the mare. It was a very bad wound.

By Mr. Matthews: He never told defendant that the mare was lame at times. He remembered defendant saying that the mare's sidebone was the largest he had even seen in his life.

Augustine Hulse, clerk to Messrs. Spiers, Defford, said he saw defendant on the Sunday morning, and Mr. Spiers introduced him as the gentleman who was going to attend to the mare Defendant said he could cure a sidebone, and that the operation would not interfere with the mare working. He also said that it would not remove the hair. He saw defendant again on the Monday at their office, with Mr. John Spiers. Defendant applied for the money for the work. Mr. J. Spiers offered £5, but at last defendant accepted £5 15s. for that and two other horses. Defendant gave them the bottle of compounds (produced). He poured something out of a larger bottle into it. He said the stuff was worth £90. It was very valuable and would cure 45 horses. There was another substance given to him on the Monday. This was to be dissolved and put into the wounds.

By Mr. Mattews: He did not know it was agreed that the charge should be £2 2s. for each horse. He thought the fee dear if the treatment was effectual.

Wyndham Brien, veterinary surgeon, Cheltenham, said he examined the mare on August 23rd at Defford. It had been treated on the outside of the off fore foot. She was in great pain, and the hoof was very swollen. He again saw the mare that morning. It was too lame to walk, and the wound was swollen up to the knee. This was caused by the application of some strong corrosives, which were eating away all round the wound. It would be a very long time before the mare could be all right.

By Mr. Matthews: There was pain caused by firing the sidebone, as well as by this treatment, but not so much. He thought the compound used consisted of sulphuric acid, and would not like to have any put on his hand after seeing the horse's feet. He had heard of Mr. Bennett's treatment before. Mr. Bennett treated a horse of Mr. Robson's at Cheltenham, which had two splints when he treated it, but it had now a large wound and was in bandages. He did not know that the stuff produced was sulphate of iron. He never used it, as he did not believe in it. He believed the operation caused more pain than there was occasion for. He did not say the operation was a failure, but did not believe the sidebone could be discharged. He would have liked the horses to have been brought there for the magistrates to see, only they were too lame.

By Mr. New: He could not say how long the mare would be incapacitated.

By General Davies: He believed it was impossible to cure a sidebone. The wound was extending to other bones, caused by the eating away of the tissues

Mr. Stanley Carless, Member of the Royal College of Veterinary Surgeons, practising at Worcester, said he examined the mare on August 28th. The wound was very unhealthy, and the mare was very lame. His opinion was that the treatment was useless. It was impossible to remove a sidebone.

By Mr. Matthews: He admitted that it was possible for anyone but veterinary surgeons to find a cure for the side-bone. He understood that defendant had been in hiding and he knew that Mr. Duncan had been to Worcester three times and could not find him. He knew of several horses in Worcester which defendant had treated and the result was the same as the others. He never knew that defendant had cured one yet. The wound was eating into the other bones of the foot.

Michael Yates Lees, veterinary surgeon, Pershore, said he first attended the mare on August 21st. He found an unhealthy wound on the fore-foot caused by the treatment of some strong liquid. He had since treated it himself with soothing ointment. The liquid had completely killed the tissues. Defendant did not invite him to see him treat a horse with some of his ointment.

Joseph Spiers recalled said he treated the chestnut mare with the lotion twice a day according to defendant's instructions until the place began to enlarge and the mare seemed in great pain. When Mr. Lees came up he gave him instruction to examine the animal professionally and to treat it professionally. The lotion was sulphate of iron. It was a great loss to them, and he believed the treatment had ruined two of his horses.

In defence Mr. Matthews read a French paper which stated that defendant had treated a number of race horses for sidebone at Chantilly (the French Newmarket) some of them valued at £20,000, and had entirely cured them with his wonderful invention.

He called Henry Perrins, who said he had 37 years practice in Worcester as a veterinary surgeon. He was satisfied that apart from defendant's treatment there was no other cure for removing sidebone. Blistering and firing were the usual methods tried. Defendant asked his opinion of his treatment of a bad case in Worcester. The horse in question went very bad on its "toes" and was very lame. Defendant painted the wound with a hair brush and put it in the stable. The day after he painted it he had the wound cleansed with sulphate of iron. He saw the horse that morning. It was in no pain and went a lot better. He had never known anything of the sort before. He also saw Mr. Watkins, of the Unicorn Hotel, and Mr. Tom Smith,

where he had treated and cured horses of sidebone. Witness, although surprised, was quite satisfied that defendant's treatment was effectual. The method adopted was far less painful than blistering or firing, as it was merely irritating. Defendant was getting well-known in Worcester, and never concealed himself. He believed that the stuff produced was the same as used by defendant.

Thomas Smith, horse dealer, Worcester, said some time ago he had a horse, which was very lame, treated by defendant for sidebone. Defendant painted it with the stuff before produced. The wound was now nearly healed, and he was surprised to see the horse cured so soon. He was thoroughly satisfied with the result of the operation. His brother had a pony which was similarly cured by defendant. He had heard of no failures from the treatment.

Walter Watkins, landlord of the Unicorn Hotel, Worcester, said he had dealt in horses for about 18 years. He had a horse suffering with spasms on July 6th, and he saw defendant, who treated the horse in a similar way to the others. The horse had been to work for three weeks and was perfectly sound. He was very satisfied with the operation.

Walter Grundy, butcher, Worcester, said defendant operated on the side bone of his horse in a similar way to the others. The wound was now healing up.

James Gibbs, Worcester, said he knew defendant very well. He lived with his wife and never concealed himself but went about the town. He did not know that defendant gave his address at the Post Office, Chantilly, France.

The Bench retired, and on returning dismissed the case.

After this Mr. New asked the magistrates to allow him to withdraw the other cases, which course was permitted.—*Berrow's Worcester Journal.*

OBITUARY.

WILLIAM LYLE FENNER, Clare, Suffolk,
Graduated, London, May, 1855.

THE DEATH OF Mr. F. J. INSALL,

An inquest was held on Thursday 6th, before Dr. Iliffe. Mr. William Farrin, assistant to Mr. Insall, said deceased suffered from congestion of the lungs some time ago, and it left him in a depressed and excitable condition of mind. The wound had been inflicted with one of his own scalpels. Dr. Bernard Wall said deceased had a wound on the right side of the neck. The jury returned a verdict of "Suicide whilst temporarily insane."

ARMY VETERINARY DEPARTMENT.

Vet. Lieut. A. J. Haslam, M.D., F.R.C.V.S., has lately obtained the degree of Doctor of Medicine of the University of Edinburgh. This young officer has studied in his leisure hours at the Universities of Dublin and Edinburgh, and also in Berlin under Dr. Koch.—*Army and Navy Gazette.*

Veterinary-Captain L. J. Blenkinsop arrived for duty at Woolwich on the 7th inst.

Veterinary-Captain S. Duff-Gillespie, A.V.D., completes next week ten years' service in his present grade, and will then be promoted to the rank of Veterinary-Major.

Veterinary-Captain W. B. Spooner, A.V.D., completes next week ten years' service in his present grade and will then be promoted to the rank of Vet.-Major.

CORRESPONDENCE.

THE DEATH OF BULLINGDON.

SIR,

Kindly allow me space for a few words in reference to the letter signed "Practitioner" in your last week's issue.

"Practitioner" has no right whatever to suppose that I am "under the impression there could be no connection between an injury to the hock, and *lung mischief*," but I do contend that a wound in a distant part of the body cannot "set up" what is usually known as *acute* pneumonia (which is the disease stated by a paragraph in *The Record* of 18th ult. to have caused Bullingdon's death) although, of course, I agree that the affection known as *septic* pneumonia, may be due to septic embolism.

I do not recognise "acute" and "septic" as synonymous terms, nor do I see that "Practitioner" is justified in assuming that the paragraph in question was taken from a newspaper, inasmuch as it is usual for a journal to acknowledge the source of news, or information, gained in such a manner, by printing at the end of any item of news thus gained, the name of the paper from which it has been obtained; the paragraph about Bullingdon was not thus acknowledged, and so I naturally concluded it was original, instead of thinking—like "Practitioner"—that it "would appear" to be something else. I shall be interested, and I think many other veterinary surgeons would be interested, in learning whether *acute* or *septic* pneumonia caused the death of Bullingdon.

I object on principle, and I decline absolutely to carry on a correspondence or discussion with any one who is so discourteous as to make such an insinuation as is contained in the first three or four lines of the third paragraph of "Practitioner's" letter, and then shelter himself behind a *nom-de-plûme*.—Yours obediently,

E. R. EDWARDS, M.R.C.V.S.

Barton-under-Needwood,
Burton-on-Trent, Sep. 12th.

[This matter is not worth further discussion. Mr. Charnock has explained the cause of death, and the pathological question may be considered any time without reference to Bullingdon.—ED.]

"CURING" SIDEBONES.

SIR,

I have forwarded you a copy of the *Worcester Journal* which contains a report of the recent cruelty case at Pershore, I hope you will be able to make room for it in *The Record* so that the majority of our members may be able to form an impartial opinion of a case important to all of us.

For my own part I can hardly believe that Mr. Perrins has been correctly reported. It seems perfectly incredible that any Fellow of the College could stand up and declare on oath that in a case of the removal of sidebone by the application of some corrosive agent "there was no pain, just simply irritation." It seems equally incomprehensible to me, that any man could possibly give himself and his profession away with such lamb-like innocence by stating boldly and emphatically in open court "He was satisfied that apart from defendant's treatment there was no other cure for the removal of side-bones." I feel sure Mr. Perrins would hardly express himself in this confused manner even if he really believed the defendant had discovered something unknown to the whole veterinary profession. Can it be possible that a Fellow of the College, boasting of 37 years practice, experienced feel-

ings of surprise when some individual demonstrated to his inquiring mind that there are chemical compounds which when applied to ossific matter will act upon and destroy it? While admitting that he has only seen one animal treated by the defendant and in the face of the evidence of Mr. W. Bryer, Mr. S. Carless and others, he is reported to come to the conclusion that even though somewhat surprised he was quite satisfied that defendant's treatment was effectual.

I also have experience of one case. Some time ago I saw an animal that had been operated upon by the defendant in this case, for splints. and two more terrible wounds, as the result, I never saw. I sent in a certificate that an act of cruelty had been committed in the case, but the operator had departed and could not be traced for some time; he would have had a rough time had he met the animal's owners within a few weeks of his promised wonderful cure.

I hope, before long to find the report of the case, so far as Mr. Perrins' evidence is concerned, repudiated as grossly inaccurate. It seems incredible that he should say things so unlike what we are accustomed to hear from him.—Yours very truly,

THOS. A. HUBAND.

Elm Villa, Cheltenham.

P.S. I have since discovered one proof that the reporting is incorrect. Mr. Perrins only qualified in 1861, and therefore cannot have been in practice 37 years.

ACTION OF THE BOARD OF AGRICULTURE.

SIR,

I would like to call the attention of your readers to the following treatment by the Board of Agriculture, to one of the members of the profession; and to ask through the pages of *The Record*, those members of it, who, like myself, may have been inspecting reported outbreaks of swine fever, making the necessary p. m., furnishing the reports, etc., for the Board since last December, if since the issuing of the last orders in July the Board has ceased to employ them, and employed any unqualified men who may happen to be the inspectors for the local authorities, but who were not employed by the Board when they took swine fever over from the local authorities into their own hands in December. They, then, giving the preference to a qualified man when in the town, whether he was inspector or not. Such is the treatment which has been meted out to me by the Board, and that without any complaint or fault to find with me. The plea is that the various local authorities have represented to them the desirability of employing, as a general rule, the veterinary surgeons appointed by the local authorities as their veterinary inspectors, presumably qualified or unqualified. To this no one could object, where that inspector is a qualified man, and in that case the Board of Agriculture ought to have employed him from the first; but where the inspector of the local authorities is an unqualified man, and where the local qualified man has done his work to the satisfaction of the Board for six months, I do object. I distinctly hold that it is unfair to the profession, unjust to the individual thus deposed, for the Board to transfer their patronage to the local quack. No doubt different local authority representatives did wish their own inspectors to be employed, and only right where that inspector was a qualified man.

The Board of Agriculture and its veterinary advisers can't be so innocent of human nature, as to expect these supplanted and other qualified members of the profession practising where unqualified men are engaged as inspectors, to play into the hands of the unqualified men; many were appointed in cattle plague time and managed to slip into a Register, and thus call themselves veterinary surgeons, if you please, "By Act of Parliament." No! it is I fear expecting too much of poor frail mankind to do so, and by such treatment as this to qualified members the Board will find that it is fast alienating them. Surely, if the representatives of the different local authorities were able to persuade the Board of Agriculture into employing their unqualified inspectors the profession at this time of the day ought to be strong enough to assert itself, and also induce the Board to employ none but qualified men when at hand—whether they are inspectors under the local authorities or not—to do its work, not as a favour, but as a right, otherwise I think our motto of "Vis Unita Fortior" is a mere misnomer.—Yours etc.,

VERUS.

PROFESSIONAL CONDUCT.

SIR,

An advertisement that appears in this week's *Field* announces the veterinary advertiser's willingness to "break-in horses" and "make or school hunters." There is an outcry now about the term "Vet." being applied to us as a profession, "so disrespectful and undignified, you know." Is it any wonder that we do not command respect when we undertake personally to break-in-horses? Hors-breaking! we are improving by leaps and bounds. How ready some of us are to both prosecute and persecute some unfortunate blacksmith or groom if he is "nobbled" doing a bit of horse or cow doctoring eh! Have they not as much right to do it as the dignified V.S. who poaches on their or other preserves?

I say that the profession are making as many quacks daily as they are qualified men. We have men stumping the country teaching this and teaching the other. We get a list now and again of a number of officers that have proceded to a certain military school to receive a course of veterinary instruction, bye and bye they leave the army, some with a gratuity, others on half-pay. He then locates himself in some corner where living is cheap, gets to know the "hossy" ones, then Capt Noall gives a little advice on chafed backs, how the bit should be placed in the mouth, etc., all of which help to make him a clever fellow about a horse. You, Mr. M.R.C.V.S. are called to a case, of say a corn or lameness arising from the corn; you know for a fact that it is so, and you express that opinion. It is very nice for you with all the letters of the alphabet to be told "Oh that can't be, Capt. Mufti says that it is sprung sinews and he ought to know because they are taught in the harmy."

Let us follow our legitimate calling, then we shall be respected by those that despise us now.

F. W. COSGROVE.

Several communications are unavoidably held over

COMMUNICATIONS, BOOKS, AND PAPERS RECEIVED:—Messrs. W. Shipley, Junr., W. S. Carless, T. A. Huband, G. C. Bland (with enclosure), J. A. Robinson, F. W. Cosgrove, F. T. Harvey, E. Wallis Hoare, P. W. Powell, W. H. Flook, T. B. Goodall, "Resurgam." *The Horse* (Schwarz and Fleming). *Programme of Sanitary Congress, The Derby Daily Telegraph, Bath Daily Chronicle, The British Fancier, Berrow's Worcester Journal.*

Original articles and reports should be written on one side only of the paper, and authenticated by the names and addresses of the writers, not necessarily for publication.

We shall be obliged by early intelligence of all matters worth bringing under the notice of the profession, and thankful to any friends who may send us cuttings from local papers, containing facts of interest.

Communications for the Editor to be addressed 20 Fulham Road, S.W.